CLAIMS

1. A ceramic armor, comprising:

(a) a ceramic material encapsulated within a metallic material; and

(b) said metallic material being plastically deformed about said ceramic material.

2. The ceramic armor of Claim 1, wherein said metallic material has a coefficient of thermal expansion greater than a coefficient of thermal expansion of said ceramic material.

3. The ceramic armor of Claim 1, wherein said metallic material comprises a Titanium alloy.

4. The ceramic armor of Claim 3, wherein said Titanium alloy comprises Ti-6Al-4V or Ti-6Al-4V ELI.

5. The ceramic armor of Claim 4, wherein said ceramic material comprises a dense SiC ceramic material such as PAD SiC-N.

6. The ceramic armor of Claim 5, wherein the coefficient of thermal expansion of the Titanium alloy is about 10.5×10^{-6} in/in °C from 0-600 °C, and the coefficient of thermal expansion of the ceramic material is about 4.1×10^{-6} in/in °C from 0-600 °C.

7. The ceramic armor of Claim 1, wherein said metallic material comprises a three piece assembly consisting of a base plate, a frame having an open center, and a cover plate, said assembly defining an internal chamber designed to closely receive said ceramic material.

8. The ceramic armor of Claim 7, wherein said frame includes a plurality of cavities therein, each of said cavities being closely filled with ceramic material.

9. The ceramic armor of Claim 8, wherein said plurality of cavities comprises four cavities, each filled with a ceramic tile or plate.

10. The ceramic armor of Claim 9, wherein said frame includes a plurality of separate side pieces assembled together to form a periphery, and a pair of cross members connected between opposed side pieces to define said cavities.

11. The ceramic armor of Claim 9, further including a plurality of assemblies stacked vertically.

12. A method of making ceramic armor, comprising:

(a) providing a base plate, a frame having an open center, and a cover plate, together defining an internal chamber;

(b) inserting a piece of ceramic material into said chamber, said ceramic material being closely received within said chamber, said base plate, frame, cover plate, and ceramic material together defining an assembly;

(c) said metallic material having a coefficient of thermal expansion greater than a coefficient of thermal expansion of said ceramic material;

(d) placing said assembly with said ceramic material therein into a hot press consisting of a furnace located within a sealed chamber;

(e) conducting a hot pressing procedure on said assembly under controlled parameters of temperature, pressure and atmosphere until said metallic material is plastically deformed around said ceramic material.

13. The method of Claim 12, wherein said metallic material comprises a Titanium alloy.

14. The method of Claim 13, wherein said Titanium alloy comprises Ti-6Al-4V or Ti-6Al-4V ELI.

15. The method of Claim 14, wherein said ceramic material comprises a dense SiC ceramic material such as PAD SiC-N.

16. The method of Claim 15, wherein the coefficient of thermal expansion of the Titanium alloy is about 10.5×10^{-6} in/in °C from 0-600 °C, and the coefficient of thermal expansion of the ceramic material is about 4.1×10^{-6} in/in °C from 0-600 °C.

17. The method of Claim 12, wherein said hot pressing procedure includes the following steps:

(a) evacuating said sealed chamber to a pressure of about 10 torr;

(b) heating said sealed chamber to about 800°C and, during said heating step, purging said sealed chamber with an inert gas at least once followed by evacuating said sealed chamber back to 1 to 1.5 torr;

(c) maintaining pressure in said sealed chamber to less than 1.5 torr once temperature therein has risen to 800°C;

(d) increasing said temperature from 900°C - 1300°C.

18. The method of Claim 17, wherein once said temperature reaches 900°C, increasing physical pressure on said assembly in said chamber to at least 250 psi and holding temperature and physical pressure constant for at least two hours.

19. The method of Claim 12, wherein said internal chamber of said assembly includes four sub-chambers.

20. The method of Claim 19, wherein said sub-chambers are created by machining said frame using an EDM process.

21. The method of Claim 12, wherein said coefficient of thermal expansion of said ceramic material is no greater than 9 x 10^{-6} in/in°C.

22. The method of Claim 21, wherein said ceramic material is chosen from the group consisting of Silicon Carbide, Boron Carbide, Tungsten Carbide, Titanium Diboride, Aluminum Oxide, Silicon Nitride, and Aluminum Nitride.

23. The method of Claim 12, wherein said atmosphere comprises a high purity Argon atmosphere.